WHAT IS CLAIMED IS:

1.	A liquid-hand	Ing system for transferring liquid back and forth from at least	ast
one first con	tainer to at least	one second container, comprising:	

a means for sustaining a pressure differential between solutions in contact with two ends to drive transport,

at least one capillary tube having predetermined length and a predetermined internal diameter, wherein a first end of said predetermined tube is positioned near the bottom of said first container, and extends to a predetermined said second container; and,

means for increasing the relative pressure within said means for sustaining a pressure gradient in contact with two ends to drive transport;

whereby at least one of said liquid contained in said first container is transferred through said capillary tube to said second container when said pressure gradient or difference is applied.

- 2. The system as defined in claim 1, wherein said predetermined tube is sealed through a wall of said means for sustaining a pressure differential between solutions in contact with two ends to drive transport in a pressure-tight manner, containing said at least one first container.
- 3. The system as defined in claim 1, whereby at least one of said liquid contained in said first container is transferred through said capillary tube by means of at least one of an intrinsic and an extrinsic vacuum source.
 - 4. The system as defined in claim 1, further comprising:

a first capillary tube spacing means to position a first end of said at least one capillary tube near the bottom of said first container; and,

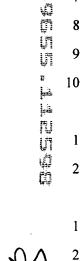
a second cardillary tube spacing means to position a second end of said at least one capillary tube in a manner to deliver said liquid to said second container.

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5.	The system as defined in claim 4, wherein said first capillary tube spacing
	st manifold and said second capillary tube spacing means is a second manifold
means is a fir	st manifold/and said second capillary tube spacing means is a second manifold

- 6. The system as defined in claim 5, further comprising a plurality of said first containers deployed in a first array, and a plurality of said second containers deployed in a second array.
 - 7. The system as defined in claim 6, further comprising:
 - a first translation subsystem means for transferring said first array in and out of said means for sustaining a pressure gradient between solutions in contact with two ends to drive transport, containing said at least one first container;
 - a second translation subsystem means for raising and lowering said first

array;

- a third translation/subsystem means for moving, transferring, raising and lowering said second array; and
- at least a supplemental means for moving, transferring, raising and lowering a microplate.
- 8. The system as defined in claim 7, further comprising computer means to control said first, second, and third translation means.

The system as defined in claim 1, wherein said at least one capillary tube is constructed of a material selected from the group consisting of pulled glass, pulled glass with an external coating, polyamide, polyethylene, polypropylene, polytetrafluoroethylene, polyester, PEEK(polyethylenetherketone), stainless steel and other chemically unreactive materials.

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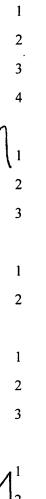
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10. The	system as in defined claim 9, wherein said means for raising said
pressure within sai	means for sustaining a pressure gradient between solutions in contact
with two ends to di	ive transport comprises a source of pressurized gas selected from the
group consisting of	air, nitrogen, argon, helium, combinations of the same and the like.

- 11. The system as defined in claim 10, wherein said pressure is at least one of raised to between about 0.5 lb. per square inch and about 10 lb. per square inch and drawn by a vacuum source having a predetermined force value.
- 12. The system as defined in claim 10, wherein said pressure is used with viscous fluids and is within a range of up to about 1000 psi.
- 13. The system as defined in claim 1, wherein said at least one capillary tube has a predetermined length selected from a range of about 10-100 cm. and has a predetermined inner diameter selected from a range of about 10-500 μ .m.

14. The system as defined in claim 1, whereby solutions are deposited and removed in either direction by at least one of sequential and parallel transport of said solutions from a well having at least two capillaries, including the deposit of two or more solutions to be mixed and removal of a resulting mixture by an additional capillary.

15. A method for transferring a predetermined amount of liquid to and from a first container holding a first volume of liquid to a second container and back comprising the steps of:

providing a means for sustaining a pressure gradient between solutions in contact with two ends to drive transport;

at least one capillary tube having predetermined length and a predetermined internal diameter, wherein a first end of said predetermined tube is positioned near

8	the bottom of said first container, and extends to a predetermined said second
9	container; and
10	means for increasing the pressure differential between the two ends,
11	whereby said liquid contained in said first container is transferred through said
12	capillary tube to said second container when at least one of said pressure gradient or
13	difference is applied;
14	(a) calibrating said capillary tube;
15	(b) calculating the transfer time required to transfer said predetermined
16	amount of liquid; and
17	(c) increasing the pressure within said box to said predetermined
18	pressure for said transfer time to transfer said predetermined amount
19	of liquid from said first container to said second container when said
	pressure gradient or difference is applied.
1	16. A method according to claim 15, wherein said means for sustaining a
2	pressure gradient between solutions in contact with two ends to drive transport is preferably
3	a pressure box for containing said at least one first container, and said calibrating step further
4	comprises the steps of:
5	filling said first container with said liquid;
6	• filling said capillary tube with said liquid;
7	• increasing said pressure within said box to a predetermined pressure
8	for a predefermined period of time to transfer a quantity of said liquid
9	to said second container;
10	measuring said quantity of said liquid thus transferred with a means
11	for measuring; and,
12	calculating the measured amount of liquid transferred per unit time
1	17. A method according to claim 16, wherein said predetermined tube is sealed
2	through a wall of said box in a pressure-tight manner.

1 2	19.	A	,
2		A me	thod for using the system of claim 14 for transferring a defined amount
_	of liquid fron	n said fi	rst container holding a first volume of liquid to said second container
3	comprising th	ne steps	of:
4		(a)	calibrating said capillary tube;
5		(b)	using said system to deliver defined amounts by:
6		•	filling said first container with liquid;
7		•	cooling with means for cooling said second end of said capillary tube
8			to below the freezing point of said liquid;
9		•	increasing the pressure within said means for sustaining a pressure
10			differential between solutions in contact with two ends to drive
11			transport, whereby liquid fills said capillary tube and forms a frozen
12		,	plug upon reaching said second end;
13		• ·	thawing said frozen plug with heating means; and
14		•	increasing the pressure within said means for sustaining a pressure
15			differential/across said tube whereby liquid is expelled from said
16			capillary tube and delivered to said second container.
1	20.	The m	nethod of claim 19, said calibrating step further comprises:
2		•	filling said first container with liquid;
3	,	•	cooling with means for cooling said second end of said capillary tube
4			to below the freezing point of said liquid;
5		•	increasing the pressure differential across said tube, whereby liquid
6			fills said capillary tube and forms a frozen plug upon reaching said
7			second end;
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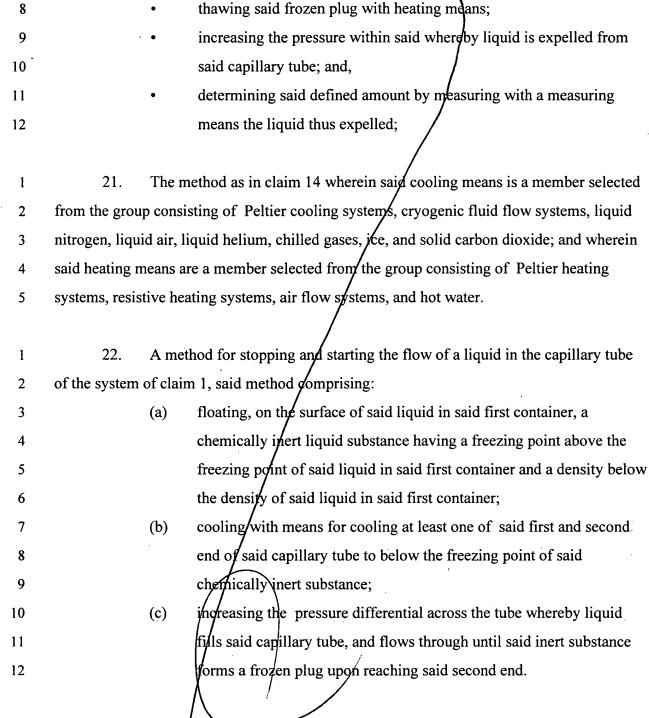
A method according to claim 16, whereby a pressure differential is effected

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23. The method as defined in claim 15, whereby a fixed closed volume is defined through the definition or two spatially separate frozen zones, which fixed closed volume may be subject to other reactions.

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1	24.	The method as defined in claim 14, wherein said means for measuring are	at
2	least one me	s selected from a means for measuring volume and a means for measuring	
3	weight.		
1	25.	The method as defined in claim 15, wherein said means for measuring are	at
2	least one mea	s selected from a means for measuring volume and a means for measuring	
3	weight.		
1	26.	The method as in claim 15 wherein said cooling means is a member selected	ed
2	from the gro	consisting of Peltier cooling systems, cryogenic fluid flow systems, liquid	
3	nitrogen, liqu	l air, liquid helium, ice, and solid carbon dioxide; and wherein said heating	
4	means are a	ember selected from the group consisting of Peltier heating systems, resisti	ve
5	heating syste	s, gas flow systems, and hot water.	
1	27.	The method as in claim 14 wherein said substance is a member selected from	m
2	the group con	isting of waxes, polymers and fluorocarbons.	
1	28.	A method for using the system as defined in claim 14, wherein said system	l.
2	further comp	ses a waste container, whereby said liquid that has been transferred to said	
3	second conta	er is transferred to said waste container, comprising the steps of:	
4		(a) positioning said/second end of said capillary to the bottom of said	
5		second container;	
6		(b) decreasing said atmospheric pressure within said box to transfer sai	d
7	•	liquid from said second container to said capillary;	
8		(c) positioning said second end of said capillary over said waste	
9		container;	
10		(d) increasing said atmospheric pressure within said box to transfer said	d
11		liquid in said capillary to said waste container.	

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A method as defined in claim 26, wherein a volumetric flow rate (Q) is 29. 2 excerised in at least one of a forward and reverse direction as described by Equation 1:

$$Q = \frac{\pi \Delta p r^4}{8 \mu L}$$

Eq. 1

- Where Δp is the differential pressure between the two ends of the capillaries, r is the radius 4
- of the capillary, μ is the viscosity of the fluid and L is the length of the capillary; and the 5
- 6 displaced volume (V) is linear with respect to time/(t) and is shown by Equation 2:

$$V = \frac{\pi \Delta p r^4 t}{8 \mu L}$$

Eq. 2

30. The method as defined in claim 19, said cooling step further comprising a controlling freezing location located between the first and second ends of said capillary.

